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ABSTRACT

To identify the characteristics of early intervention programs most predictive of growth in participants' competencies, a comparison was made of the effects of three different Iowa Head Start programs on teachers, mothers, and children. Three agencies with home-based, three with center-based, and three with combination programs from rural areas and small communities participated in the study. Measures of cognitive development of the children, home stimulation provided by the mothers, teacher attitudes toward Head Start parents, and demographic measures were obtained near the beginning and end of a program year for 70 families. In contrast to mothers in home-based and center-based programs, mothers in combination programs decreased the stimulation of their children over the program year. Mothers in home-based programs reported more involvement in Head Start program activities than did mothers in other programs. Teachers in combination and center-based programs reported receiving less training for home visiting than did teachers in home-based programs. Teachers with more experience in Head Start and teachers with more formal education unrelated to early childhood education also expressed stronger negative attitudes toward parents than did teachers with less education and experience. Implications for teacher training and evaluation in combination, home-based, and center-based early intervention programs are discussed.
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EARLY INTERVENTION:

COMPARATIVE IMPACT OF PROGRAMS ON MATERNAL AND CHILD COMPETENCE

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Abstract

Effects of home-based, center-based, and combination Head Start programs on teachers, mothers, and children were compared at the beginning and end of the program year. Measures of cognitive development of the children, home stimulation provided by the mothers, teacher attitudes toward Head Start parents, and demographic measures were obtained for 70 randomly selected Head Start families. Children in all three program options made significant cognitive gains. In contrast to mothers in the home-based and center-based programs, mothers in the combination programs decreased the stimulation of their children over the program year. Mothers in home-based programs reported more involvement in Head Start program activities than did mothers in the other two options. Teachers in combination and center-based programs reported receiving less training for home visiting than did teachers in home-based programs. Teachers with more experience in Head Start and teachers with more formal education unrelated to early childhood education also expressed stronger negative attitudes toward parents than did teachers with less education and experience. Implications for teacher training and evaluation in combination, home-based, center-based early intervention programs are discussed.

EARLY INTERVENTION:

COMPARATIVE IMPACT OF PROGRAMS ON MATERNAL AND CHILD COMPETENCE

The purpose of the present study was to identify the program characteristics of early intervention programs most predictive of growth in competence of children and their mothers. Based on earlier reviews of research by Lazar and Darlington (1979), the following program characteristics were selected for study: program type (e.g., home-based, center-based, or combination), teacher/home visitor attitudes towards parents, and teacher/home visitor training.

Some researchers and reviewers (e.g., Miller & Bizzell, 1985; Sprigle & Schaefer, 1985) have found curriculum or program option to be significant in influencing program outcome, while others have not (e.g., Royce, Darlington, & Murray, 1983; Hubbell, 1983). Still others have reported no outcome differences related to program type or curriculum at one measurement point and highly significant different outcomes at another time (Weikart, 1972; Schweinhart, Weikart, & Larner, 1986). Such discrepant findings may be related to the different instruments used to measure program outcomes, different program types studied, to "sleeper effects", or to variables confounded with program type. An example of the last problem is presented by Sprigle and Schaefer (1985) who reported that sixth graders who had been enrolled in a demonstration model early intervention program, Learning to Learn, were superior in academic achievement to sixth graders who had been enrolled in a typical Head Start program as preschoolers. Although the performance disparity between the two groups could be related to the curricula, one might speculate that teacher training differences could be confounded with curricula differences in any comparison between a model and a typical program.

Head Start, a national program for low-income families with preschool children, primarily four-year-olds, provides services in Parent Involvement, Social Services, and Health, as well as in Education. Currently, most Head Start programs operate under one of three program types or options. In the home-based program option, families receive weekly home visits from a teacher/home visitor who helps the parent learn to teach the child as well as assists the parent to meet identified needs in the other component areas. Children in the home-based option participate in monthly peer socialization experiences, typically in a classroom setting. In the center-based program option, children typically attend class four days each week, parents are encouraged to volunteer in the classroom, and families receive a minimum of two home visits during the program year. In combination programs, children typically attend class two days each week and teachers make home visits twice each month. No evidence exists regarding the relative impact of each program option on maternal and child competence.

In each program option, Head Start Program Performance Standards mandate that Head Start staff provide a program to support and enhance the parental role as the principal influence in their children's education and development (Adminstration for Children, Youth, and Families, 1975). In addition, under Head Start Program Performance Standards, education staff are required to include parents in curriculum development, to involve them as resource persons, and to involve them in center, classroom, and home program activities. The curricula of each local Head Start program is developed to meet identified community, family, and individual needs. Therefore, any comparison of program options across several Head Start communities is confounded with local curricula which vary among communities with the same program option.

A second program characteristic that may influence program effectiveness is teacher/home visitor attitudes towards parents. Parent involvement has been a key focus during the past two decades for most early intervention programs and for all Head Start programs (Honig, 1982; O'Keefe, 1979). Katz (1980) and Bronfenbrenner (1979) argue that supportive links are needed between parents and teachers for effective education. Bronfenbrenner (1979) suggested that the developmental, or beneficial, impact of any dyad (e.g., the teacher-child, teacher-parent, or the parent-child dyads in the Head Start program) increases in relation to the degree of reciprocity, mutual positive feeling, and gradual shifting in the power balance toward the developing person. Slaughter (1983) found that both a toy demonstration program, in which home visitors demonstrated the educational use of toys and activities, and a mothers' discussion group, in which staff served to facilitate mothers' decision-making and teaching skills, increased maternal self-concept and child competence.

Kontos, Raikes, and Woods (1983) developed an instrument to measure the attitudes of staff in early childhood programs toward parents. They found that teachers in part-day preschool programs expressed more positive attitudes toward parents; furthermore, preschool teachers rated parents as more involved than did teachers in full-day day care programs. In subsequent research, Kontos and Wells (1986) found that negative teacher attitudes appeared to influence the teachers' interactions with the parents but not the teachers' interactions with children. Kontos and Wells reported less communication between teachers and parents whose parenting was held in low esteem by staff.

No test of the impact of teacher attitudes towards parents has been made in a Head Start program. Lazar and Darlington (1979) found significant gains

in academic performance and motivation among children and in maternal attitudes toward school performance in all the early intervention programs they studied. In a meta-analysis of Head Start research studies Hubbell (1983) concluded that parent involvement, as defined in the Head Start Program Performance Standards, was an important requirement for long-lasting program gains for both parents and children. Other reviewers have reached similar conclusions (e.g., Honig, 1982; Royce et al., 1983). Presumably, such parent involvement would only occur in programs where staff demonstrate the mutuality, reciprocity, and mutual positive feeling suggested by Bronfenbrenner. Where such mutuality is lacking (cf. Honig, 1982), parents frequently fail to keep appointments and drop out of the program and/or "missionary" teacher/home visitors become disillusioned and burn out because of the uncooperative parents.

A third possible program characteristic which could account for differences in the development of parent and child competence is teacher training. Weikart (1972) reported the significance of teacher training and regular program monitoring for favorable program outcomes in early intervention programs. In the National Day Care Study, Ruopp, Travers, Glantz, and Coelen (1979) found that professional training in early childhood education was related to overall program quality; however, advanced formal education in fields unrelated to early childhood education or child development was unrelated to program quality. Moreover, most college or university-based teacher education programs in child development or early childhood education provide significantly more training for the classroom-based rather than the home-based programming (Almy, 1982). Few teacher education programs provide training for home visits in which the teacher functions as an adult educator rather than a child educator.

Therefore, one might hypothesize that the effectiveness of each Head Start program option would be affected by the amount of inservice training provided for that option in addition to the formal early childhood education obtained by teachers.

The following hypotheses were made in the present study:

1. Because of the differences in quantity of contact time with parent and with child among the three program options, center-based programs were predicted to produce greater gains in child cognitive development.
2. Similarly, because of the differences in quantity of contact time with parent and with child among the three program options, home-based programs were predicted to produce greater gains in both maternal involvement in the Head Start program and in learning experiences provided by the mother to the child.
3. Teachers with more training in center-based curriculum will produce greater gains in child competence; teachers with more training for home-based programming will produce greater gains both in maternal involvement in the Head Start program and in learning experiences provided by the mother to the child.
4. In a test of Bronfenbrenner's hypothesis of the developmental dyad, it was also predicted that teachers with more positive attitudes toward parents would produce more gains in maternal involvement in the Head Start program, in learning experiences provided by the mother, and in the child's cognitive development.

Method

Subjects

Three Iowa Head Start agencies with home-based, three with center-based, and three with combination programs were randomly selected from the 18 Iowa

Head Start agencies. Because Iowa home-based programs were located only in predominately rural areas, all subjects were recruited from the rural areas and small communities (under 15,000 population). Agency staff were asked to remove from the sampling pool any children with such severe motor or language handicaps that they could not be individually tested using the McCarthy Scales; fewer than 5% of children on class lists were withdrawn in this process. From the agencies serving rural areas, 70 randomly selected families, together with their assigned teachers/home visitors (N=32), participated in the study. Refusal rate by mothers was less than 10%; the dropout rate was less than 8%, including two families dropped because their agency changed program options in the middle of the year. There were no differences among the program options in either the refusal or dropout rates.

Table 1 summarizes some characteristics of the sample. Of the 70 mothers participating in the study, 19 (27%) had less than a high school diploma; 22 (31%) had completed some vocational, technical, or college coursework beyond high school. Of the 32 teachers/home visitors, 14 (44%) had earned an elementary or early childhood teaching certificate while 12 (38%) had earned a Child Development Associate (CDA) credential and 6 (19%) had neither. Of the 32 teachers/home visitors, 15 (47%) had earned at least a baccalaureate degree. All participants were white, as are the majority of rural Iowans.

Insert Table 1 about here

Instruments

The McCarthy Scales of Children's Abilities (McCarthy, 1972) were used to measure the cognitive (verbal, perceptual, quantitative, memory) and motor skills of the child at the beginning and end of the program year. The HOME

scale for preschoolers (Caldwell & Bradley, 1984) was used to measure the learning experiences and warmth provided by each mother. The HOME scale consists of 55 items; each item is scored yes or no following an observation and interview that lasts approximately one hour. Sample items include whether or not the child has toys which teach color, size, and shape, at least 10 books are visible in the home, parent's voice conveys positive feeling to child, and parent usually responds verbally to the child's speech. Interrater reliability for the HOME was established by sending pairs of researchers into the homes of randomly selected Head Start families not participating in the study to administer or observe and, individually, to score the HOME scale; percentage agreement averaged above 90% across all pairs of researchers. Cronbach's alpha for the complete scale was calculated to be .82 in the present study; Caldwell and Bradley (1984) reported internal consistency (KR-20) of .93, a test-retest stability correlation of .70, and a correlation of .58 between HOME scores and mental test performance in four-year-olds.

The Mother Involvement Scale (Reisetter, 1984) was used to obtain an indication of the mother's involvement in various aspects of the Head Start program, from teaching her own child at home to volunteering in the classroom, attending parent education classes, or serving on parent committees. Adapted from Adams (1976), the scale consisted of ten five-point Likert items on which mothers indicated their relative involvement in each type of activity. Reisetter (1984) found that, in a sample of Head Start mothers, scores on the Maternal Involvement scale were correlated with scores on the Parent Involvement factor of the Iowa Parent Behavior Inventory, indicating that parents who were more involved in Head Start programs also reported more involvement in interactions with their children at home. Cronbach's alpha on the Mother Involvement scale in the present study was .74.

The Kontos Scale of Parenting Behaviors (Kontos et al., 1983) was used to measure teachers' general attitudes toward the parents in their program. The scale consists of 30 seven-point Likert-type items grouped into three subscales: negative parent attitudes (e.g., children are neglected), positive parent attitudes (e.g., child has clothes he/she can manipulate by self), and involved parent attitudes (e.g., parent offers to volunteer in program). Kontos et al. reported Spearman-Brown reliabilty coefficients of .87 for the negative parent attitude subscale, .85 for the positive attitude subscale, and .70 for the involved parent subscale. As originally designed, teachers are asked to complete each item to describe the ideal parents, the typical parents, and the actual parents in their centers. In the present study, teachers were simply asked to complete each item only once to describe the parents in their Head Start centers. In the present study, Cronbach's alpha for the positive parent attitudes subscale (nine items) was .79; for the 15-item negative attitudes subscale, alpha was .85, and for the four-item involved parent subscale, alpha was .64. Because of the low reliability for the involved parent subscale, only the negative and positive subscales were used in the present study.

A Family Contact Hours form was distributed to each teacher to summarize the contacts with each family during the month of November. Such records are regularly kept by Head Start staff as a part of the required reporting to regional and national offices. Each teacher was asked the total number of children and parents served in her class, the number and average attendence of parents participating in parent education programs, center committees, classroom and other volunteer activities (e.g., serving as a bus aide or a kitchen helper), and the number of hours for each activity.

Procedure

In Time I, data were collected from all families during home visits conducted within eight weeks of the beginning of the program year; in Time II, data were collected from 65 families within six weeks of the end of the program year. Following random selection of families from class lists, mothers were sent a letter explaining the study and requesting their voluntary participation. Because nearly half the familes had no telephones, arrangements for home visits were made either by mail or by phone. Each mother was given $10 at the conclusion of the second visit to compensate her for her time and effort in participating in the study.

Researchers included nine female graduate students and faculty members. During each home visit, the researcher completed the HOME scale, and the mother completed a Mother Involvement Scale and a demographic questionnaire. The researcher administered the McCarthy Scales of Children's Abilities to each child individually either at the home or at the center. Each child's teacher or home visitor completed and returned by mail a questionnaire on her educational background, both preservice and inservice, as well as the Kontos Scale of Parenting Behaviors. In January, each teacher was also asked to summarize the amount of parent education and volunteering that had occurred in her center during the month of November.

Results

Program Option and Time

Correlational analyses revealed no significant correlations with gender of children; therefore, males and females were grouped for all analyses. A preliminary hierarchical mixed (between/within) ANOVA with three levels of nesting was used to analyze the results for each dependent variable. Program Option (three levels) was the between factor; time was the repeated measures factor. Agency was nested within program option, and teacher nested within

agency. Neither agency nor teacher proved significant in preliminary analyses; therefore, a 3 (Program Option) by 2 (Time) ANOVA was used to analyze the results for each dependent variable. T-tests revealed no significant differences among the program options in the demographic variables of children's age, mother's age, employment, education, number of children, Head Start experience, or income.

Home Stimulation. Neither main effects of program option nor time on HOME scores were found; however, the predicted interaction effect of time by program option was found, $F(2, 62)=4.82$, $p<.05$. Inspection of the means in Table 2 reveals that, in contrast to mothers in the other two programs, mothers in the combination programs significantly decreased the stimulation provided to their children in the home during the program year.

Cognitive Development. No main effect of program option was found, nor were any interaction effects found. A main effect of time was found for the general cognitive subscale raw scores on the McCarthy Scales of Children's Abilities, $F(1, 62)=209.63$, $p<.0001$; children made significant gains in verbal, quantitative, perceptual, and memory skills in all three program options.

Maternal Involvement. Neither main effects of time nor interaction effects were found. A main effect of program option was found for mother involvement, $F(2, 60)=5.29$, $p<.05$; inspection of the means in Table 2 reveals that mothers in the home-based program described themselves as more involved ($M=35.55$) than did mothers in the center-based ($M=29.77$) or combination program ($M=29.82$).

Staff Training. A one-way ANOVA was used to test for the effects of program option on staff training for home visits. As predicted, teachers in the combination and center-based programs had received significantly less

home-based training (see means reported in Table 2) than had teachers in the home-based programs, $F(2, 30)=12.29$, $p<.01$.

Insert Table 2 about here

Teacher-parent dyads

A one-way ANOVA among program options revealed no significant differences in negative or positive attitudes among teachers/home visitors. Table 3 reports correlations between teacher attitudes toward parents and other variables. All correlations were computed between teacher attitudes and class means for maternal and child variables. Teachers with stronger negative attitudes toward parents were more likely to have academic degrees, but not a CDA credential or a teaching certificate. Teachers with stronger negative attitudes toward parents generally had more years of experience in Head Start. Teachers working with mothers with more years as a Head Start parent reported stronger negative attitudes toward parents; however, there was no correlation between negative attitudes toward parents and the number of children in the Head Start family. Teachers' expressed positive attitudes towards parents were positively correlated with researchers' evaluations of the home learning environment as measured by the HOME scale. Likewise, teachers' expressed negative attitudes towards parents were negatively correlated with researchers' evaluations of the home learning environment.

Children's age as well as children's scores on the general cognitive scale of the McCarthy at both the beginning and end of the program year were correlated with teachers' expressed positive attitudes toward parents. Teachers with more positive attitudes toward parents worked with parents who

provided more academic stimulation and warmth to their children at both the beginning and end of the program year.

Parent-child dyads

Amount of learning stimulation in the home, as measured by the HOME scale, was significantly correlated with children's performance on the general cognitive subscale of the McCarthy both at the beginning (r=.33, p<.01) and at the end of the program year (r=.50, p<.0001). No other maternal or family characteristics, including demographic variables, were correlated with children's performance on the McCarthy scales at either the beginning or end of the program year.

Discussion

The limitations of the present study include many of those discussed by Zimiles (1986). The results of the present study must be interpreted cautiously. Because families were not randomly assigned to program options, the findings should not be interpreted to imply causality. Local Head Start agencies select the program option that presumably meets the needs of their communities; families in each community, who are recruited during the spring prior to the beginning of the program year, have no choice of program option. Nevertheless, it is possible that some parents who would have enrolled their children in one option, e.g., a center-based program, chose not to enroll their children in a home-based program which would provide fewer center-based hours and require more home visits.

Because of the lack of promised federal funding, the sample was smaller than originally designed and comparisons among teachers in the three options were not possible. Therefore, no formal test of the third hypothesis, that teacher with more positive attitudes toward parents would produce more gains in maternal involvement in the Head Start program, in learning experiences

provided by the mother, and in the child's cognitive development. Nevertheless, the relationships and differences observed in the present study identify some disturbing trends which should be addressed.

Program Option and Time

Cognitive Development. No evidence was found supporting the first hypothesis, that is, that children in center-based programs would make more progress than children in the other two program options. The significant progress made by children in all three program types supports the conclusions of Lazar and Darlington (1979) who found similar progress in children enrolled in a wide variety of early intervention programs. Because no control group was included in the present study, it was not possible to determine whether the progress made was significantly greater than would be expected due to maturation alone.

Maternal Involvement. At least partial support for the second hypothesis, that home-based programs would produce greater gains in maternal stimulation of the child and program involvement is found in that mothers in home-based programs reported significantly more involvement in the Head Start program than did parents in the other two options. The absence of any time by program option effect for maternal involvement, however, suggests that this increased involvement was either largely achieved between initial recruitment and the beginning of the program year or that a selective group of mothers who were willing to be more involved agreed to participate in the home-based program option. Furthermore, the lack of any significant difference between the home learning stimulation provided by mothers in the center-based and in the home-based programs suggests that any difference in maternal involvement between mothers in center- and home-based programs did not significantly influence maternal competence in providing home stimulation.

Staff Training and Home Stimulation. The third hypothesis, that teachers with more training for their respective program would produce more gains in maternal and children's development, was partially supported. The sample of teachers was too small to permit comparisons among teachers with different amounts of training, and training differences were confounded with program option. Teachers in the combination and the center-based programs had received significantly less training for home visits than had staff in the home-based programs. No differences among program options were observed in children's cognitive gains, as measured by the McCarthy general cognitive subscale. However, during the program year, parents in the combination programs significantly decreased the amount of stimulation they provided their children. Comparison of the scores on the HOME parents received in the present study with those published in the original validation of the instrument revealed that scores of parents in all three options were consistent with those obtained in the normative sample at Time I as were the scores of parents in the home-based and center-based children at Time II. Therefore, the decrease in the stimulation scores received by the parents in the combination option cannot be explained by a simple regression to the mean phenomenon.

The lack of training in home-based instruction together with the significant decrease in stimulation observed in the homes of mothers enrolled in the combination program raise questions regarding the effectiveness of the parent involvement component of the combination program. One might speculate that, without sufficient training in home-based programming, the teacher may conduct the required bimonthly home visit as a parent conference and may report on the child's progress in the classroom or may simply teach the child rather than involve the parent as the child's primary educator. An alternate

explanation might be that parents may be confused as to their role in a combination program. Confident that their children are receiving adequate stimulation and variety in experiences in the two half-days of school attendance each week, parents may actually decrease the stimulation they provide in their homes. Additional research is needed to replicate these findings as well as to determine if staff training for home-based programming will reverse the deficit in parent home stimulation scores, or if the deficit is inherent in the design of that program option. Nevertheless, because inservice training was confounded with program option in the present study, it is not possible to separate the effects of training from the effect of program option.

Parent-Child Dyads. The correlations between learning stimulation provided in the home, as measured by the HOME, and children's cognitive performance on the McCarthy scales provides additional validation for the HOME scale (Caldwell & Bradley, 1984).

Teacher-Parent Dyads. The fourth hypothesis, that teachers with more positive attitudes toward parents would produce more gains in maternal competence was partially supported. Because of the limited sample size, it was not possible to test this hypothesis formally. However, the correlations among teacher experience, teacher education in areas non-related to early childhood education, and negative attitudes toward parents are disturbing. Significant correlations between researchers' evaluations of the home learning environment and teachers' negative attitudes toward parents support the validity of the teachers' perceptions of the parents. However, the fact that teachers were asked to describe all Head Start parents they have worked with, not only the parents in the current study, indicates that the teachers may be

generalizing their negative assessments of a few parents to all parents in the Head Start program.

Teachers' teaching experience was positively correlated with their reported negative attitudes toward parents. Furthermore, teachers' negative attitudes toward parents was correlated with the mothers' years of experience in Head Start. These correlations may indicate that the more experienced and capable teachers have been assigned to work with the most difficult, intransigent parents. However, the fact that most rural Iowa communities are served by only one Head Start classroom and one local teacher makes this possibility unlikely. Alternative explanations may be a group of teachers who, based on prior experience, have developed negative expectations for parents and are "burned out" in parent involvement or a group of mothers who enroll successive children in Head Start without increasing their own involvement in their children's education.

Bloom (1981) concluded from his review of the research research that parent involvement is a key to long-lasting improvement in the child's competence, as well as that of the parent. The success of any early intervention program seems to depend on a system of successful interactions among teacher-child, teacher-parent, and parent-child dyads. However, if parent involvement is needed for long-term success of Head Start, prerequisites among teaching staff include both a positive attitude and a positive expectancy for such involvement. Results of the present study might be interpreted to suggest that teachers' behaviors in the realm of parent involvement need to be monitored and reevaluated, particularly in experienced staff. Complementary strategies to impact on these behaviors and, perhaps, attitudes, and to develop the skills in the teaching staff to implement Bronfenbrenner's concept of reciprocity and gradual shift in the balance of

power toward the parent may be an important priority to address as programs seek to enhance the development of children and their parents.

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Table 1

Demographic Characteristics

	Mean (SD)	Minimum	Maximum
Children			
Age (Months)	51.93 (6.7)	37	63
Mothers			
Age	28.97 (5.4)	20	43
Number of Children	2.83 (2.09)	1	13
Monthly Income	$581. ($355.)	$72	$2200
Teachers			
Teaching Experience (Years)	2.84 (3.58)	1	12

Table 2

Mean Scores (Standard Deviations) for Mothers and Teachers

	Program Option		
	Home-based	Center-Based	Combination
Mother Involvement	N=22	N=26	N=22
Time I	35.55 (5.95)	29.77 (7.58)	29.82 (6.46)
Time II	34.41 (5.47)	31.24 (5.75)	30.43 (4.82)
HOME	N=22	N=26	N=22
Time I	43.18 (6.38)	40.73 (5.94)	40.95 (6.92)
Time II	44.89 (5.98)	41.81 (5.18)	37.76 (9.07)
Home-based Staff Training	N=7	N=16	N=9
Time I (hours)	65.25 (43.88)	10.72 (25.95)	12.22 (18.39)

Table 3

Correlations with Teachers' Attitudes toward Parents

	Negative Parent Attitudes	Positive Parent Attitudes
Teachers' Education	.44*	NS
Teachers'Head Start Experience	.46*	NS
Mothers' Education	-.46**	NS
Mothers' Head Start Experience	NS	-.50**
HOME Score		
Time I	-.32*	.36*
Time II	-.38*	.50**
Children's Age	NS	.59***
McCarthy General Cognitive Scales		
Time I	-.33*	.63***
Time II	NS	.53**

N=31 *p<.05 **p<.01 ***p<.001